peritoneal administration of chemotherapy does not appear to be superior to administering it intravenously in patients with bulky intraperitoneal disease. In patients with small-volume disease (tumor nodules less than 2 cm in diameter), however, the results have been excellent, with 70% of patients alive, with a median follow-up of 29 months and with an apparent plateau on the survival curve. These results are superior to any other published data in patients with refractory ovarian cancer.

These encouraging results need to be confirmed in prospective, randomized clinical trials involving a much larger number of patients. The Southwest Oncology Group is currently conducting a prospective clinical trial in which patients with previously untreated stage III ovarian cancer (disease confined to the peritoneal cavity; tumor nodules less than 2 cm in diameter) are being randomly assigned to intraperitoneal cisplatin-containing chemotherapy or intravenous cisplatin-containing chemotherapy. Many single-arm clinical trials of intraperitoneal chemotherapy have been initiated over the past two years at a number of university medical centers. In addition, based on the above encouraging results, intraperitoneal administration of cisplatin is being more widely used in community practice for ovarian cancer patients with refractory, small-volume disease confined to the peritoneal cavity.

SOLOMON ZIMM, MD
La Jolla, California

REFERENCES

Dedrick RL, Myers CE, Bungay PM, et al: Pharmacokinetic rationale for peritoneal drug administration in the treatment of ovarian cancer. Cancer Treat Rep 1978 Jan; 62:1-11

Markman M, Cleary S, Lucas WE, et al: Intraperitoneal chemotherapy with high-dose cisplatin and cytosine arabinoside for refractory ovarian carcinoma and other malignancies principally involving the peritoneal cavity. J Clin Oncol 1985 Jul; 3:925-931

Pfeifle CE, Howell SB, Markman M, et al: Totally implantable system for peritoneal access. J Clin Oncol 1984 Nov; 2:1277-1280

Zimm S, Cleary SM, Lucas WE, et al: Phase I/pharmacokinetic study of intraperitoneal cisplatin and etoposide. Cancer Res 1987 Mar 17; 47:1712-1716

Zimm S, Markman M, Cleary SM, et al: Survival of patients with small volume, refractory ovarian carcinoma treated with intraperitoneal cisplatin-based chemotherapy, *In* Salmon SE (Ed): Adjuvant Therapy of Cancer V. New York, Grune & Stratton, in press

Bone Marrow Transplantation as Primary Treatment of Leukemia

CONSIDERABLE PROGRESS HAS BEEN MADE during the past ten years in the treatment of acute and chronic myelogenous and acute lymphoblastic leukemia using bone marrow transplantation.

In the initial trial of *allogeneic* bone marrow transplantation in patients with relapsed acute myelogenous leukemia by the Seattle transplant team, a long-term relapse-free survival of 13% was achieved in patients for whom all prior therapies had failed. When patients, however, were transplanted earlier in the course of their disease—in first remission—relapse rates dropped to 15% to 20% and overall survival is now 40% to 50%. Because chemotherapy for acute myelogenous leukemia has been improving and the complications of bone marrow transplantation have remained significant, the role and timing of allogeneic transplantation have been questioned.

The success of allogeneic bone marrow transplantation in the treatment of acute myelogenous leukemia was recently confirmed by three randomized studies of transplantation versus chemotherapy. These studies all show a greatly decreased risk of relapse but considerable mortality due to graft-versus-host disease and concurrent infections following bone marrow transplantation in comparison with consolidation chemotherapy. As a result, overall survival is better following bone marrow transplantation, but the complication rate remains high. Further success will depend on the improved abrogation of graft-versus-host disease and fewer infectious complications. Attempts to decrease graft-versus-host disease by T-cell depletion of the donor marrow have been successful in abrogating the reaction but have unfortunately been complicated by higher rates of fungal infection, a greater risk of graft rejection and a higher risk of leukemic relapse.

Autologous transplantation for patients with acute myelogenous leukemia in both first and second (or third) remission avoids the risk of graft-versus-host disease but has a potentially higher relapse rate than allogeneic bone marrow transplantation. Preliminary results indicate that 25% to 40% of patients in first remission may achieve at least one year of disease-free survival following ablative chemotherapy and reinfusion of marrow harvested and frozen while in remission. Autologous transplantation of marrow purged of residual leukemic cells with 4-hydroperoxycyclophosphamide has resulted in a two-year disease-free survival of 40% for patients with acute myelogenous leukemia in second or third remission.

For patients with chronic myelogenous leukemia there had been no hope for cure and no improvement in survival with any form of standard therapy since George Richards Minot introduced splenic irradiation in the 1920s. Now data clearly show that allogeneic bone marrow transplantation will provide a 50% to 60% relapse-free survival in patients with chronic myelogenous leukemia in chronic phase. Results are better the earlier the transplant is done after diagnosis and when patients are younger than age 30. Especially encouraging is the absence of Philadelphia chromosome-positive cells as long as five years after transplantation. When patients reach the accelerated phase of chronic myelogenous leukemia or an overt blast crisis develops, disease-free survival drops to 15%. Results of autologous transplants for chronic myelogenous leukemia have been uniformly poor thus far. Using partially matched siblings with T-cell depletion of the donor marrow or matched unrelated donors has had limited success, but complications such as increased rates of graft rejection and relapse have limited this to an experimental approach at present.

Allogeneic transplantation for acute lymphoblastic leukemia has not been as successful, primarily because of a high posttransplant relapse rate (60%). Changes in the conditioning chemotherapy regimen may improve the outcome. A relapse-free survival rate of 30% in children in second remission and without human leukocyte antigen-matched donors has been achieved by using monoclonal antibodies to common acute lymphocytic leukemia antigen to deplete autologous marrow of leukemic cells.

The use of improved conditioning regimens to decrease the possibility of relapse, new ways of treating the marrow to purge it of T cells or leukemic cells and enhanced prevention of posttransplant infections will enable more patients with leukemia to be treated successfully. In time, partially matched and unrelated transplants will also become practical. Ultimately, it should become possible to culture pure marrow stem cells, avoiding graft-versus-host disease entirely.

Current recommendations would include allogeneic bone

marrow transplantation in first remission for patients younger than 40 years who have acute myelogenous leukemia, autologous bone marrow transplantation for patients between the ages of 40 and 55 with acute myelogenous leukemia or for those younger than age 40 without a matched donor, allogeneic marrow transplantation for patients younger than 50 years with chronic myelogenous leukemia in the chronic phase and allogeneic transplantation for patients younger than 40 years with relapsed acute lymphoblastic leukemia.

MAREK J. BOZDECH, MD
San Francisco

REFERENCES

Applebaum FR, Dahlberg S, Thomas ED, et al: Bone marrow transplantation or chemotherapy after remission induction for adults with acute nonlymphoblastic leukemia. Ann Intern Med 1984; 101:581-588

Pirsch JD, Maki DG: Infectious complications in adults with bone marrow transplantation and T-cell depletion of donor marrow. Ann Intern Med 1986; 104:619-631

Thomas ED, Clift RA, Fefer A, et al: Marrow transplantation for the treatment of chronic myelogenous leukemia. Ann Intern Med 1986; 104:155-163

Thomas ED: Marrow transplantation for malignant diseases. J Clin Oncol 1983; 1:517-531

Yeager AM, Kaiser H, Santos GW, et al: Autologous bone marrow transplantation in patients with acute nonlymphocytic leukemia, using ex vivo marrow treatment with 4-hydroperoxycyclophosphamide. N Engl J Med 1986; 315:141-147

Physician-Patient Communication

RECENT SOCIAL SCIENTIFIC RESEARCH has clarified certain social structural barriers to physician-patient communication. Practicing internists spend little time giving information to their patients (about 1.3 minutes on the average in encounters lasting about 20 minutes), overestimate the time they spend giving information (by a factor of about nine) and underestimate their patients' desire for information. College-educated patients and those with upper- or upper-middle-class occupations generally receive more information than do patients who have not gone to college or who hold working-class occupations. There is no difference between poorly educated, lower-class patients and better educated, upper-class patients in their desire for information. Physicians, however, misperceive this desire much more commonly for poorly educated or lower-class patients. Busier internists who see more than 20 patients per day spend much less time giving information and also give a smaller number of explanations. Because adequate communication takes time, this finding has implications about the number of patients whom physicians should reasonably see per day in clinical practice.

Another fruitful direction of research has focused on nonverbal communication and the sociolinguistic structure of physician-patient encounters. When physicians are skillful at decoding body movement and postural cues to emotion (as measured by tests of nonverbal communication ability), their patients show higher levels of satisfaction and compliance. Interestingly, physicians' expression of nonverbal tension in encounters is positively associated with patients' satisfaction and compliance, probably because it conveys a strong task orientation to which patients respond favorably. Physicians frequently interrupt patients during encounters; usually these interruptions involve physician-initiated questions. Such a "high-control style" may have counterproductive effects in history taking, especially when it leads physicians to overlook nontechnical concerns that patients feel are important in their everyday lives. Interrupting behavior also may reflect sexual differences in language use, because female physicians tend to interrupt their patients much less frequently than do male physicians.

Training programs should emphasize the potentialities for improving physician-patient communication. In particular, physicians should know that patients frequently want more information than practitioners realize and that sociolinguistic differences in language use can impede effective communication. Nonverbal communication skills and the highly structured, interrogative mode of the medical history also deserve reconsideration in medical education.

SHIRAZ MISHRA, MD
HOWARD WAITZKIN, MD, PhD
Irvine, California

REFERENCES

Beckman HB, Frankel RM: The effect of physician behavior on the collection of data. Ann Intern Med 1984 Nov; 101:692-696

Mishler EG: The Discourse of Medicine: Dialectics of Medical Interviews. Norwood, NJ, Ablex Publ, 1984

Waitzkin H: Doctor-patient communication: Clinical implications of social scientific research. JAMA 1984 Nov; 252-2441-2446

Waitzkin H: Information giving and medical care. J Health Soc Behav 1985 Jun; 26:81-101

West C: Routine Complications: Troubles With Talk Between Doctors and Patients. Bloomington, Ind, Indiana University Press, 1984